

What is claimed:

1. A pulley comprising:  
a hub configured to be mountable on a driving shaft,  
a rim,  
a driving connection between the hub and rim, enabling said hub and rim to rotate in unison,  
a drive assembly extending from the hub and operable to configure the rim between a circular profile and a non-circular profile.
2. A pulley as set forth in claim 1, wherein said driving connection comprises at least two pairs of spaced diametrically opposed sleeves and said drive assembly comprises an actuator mounted within each of said pair of sleeves
3. A pulley as set forth in claim 2, wherein said driving connection comprises two spaced diametrically opposed sleeves arranged along a major axis and along a minor axis and said actuators are arranged to extend along the major axis and contract along the minor axis, presenting an oval non-circular profile.
4. A pulley as set forth in claim 3, wherein said hub has at least one pair of brushes electrically connected to said actuators, said brushes positioned to engage with a pair of voltage rails transferring electrical energy to energize said actuators.
5. A pulley as set forth in claim 4, wherein said actuator is a shape memory alloy actuator.
6. A pulley as set forth in claim 5, wherein said rim is molded from an organic resin material.
7. A pulley as set forth in claim 1 wherein said rim has at least a pair of diametrically opposed openings and drive assembly is a pair of diametrically opposed piezoelectric stacks operable to extend through said openings presenting said non-circular profile.
8. A pulley as set forth in claim 1 wherein said rim has at least a pair of diametrically opposed openings and said drive assembly is a pair of diametrically opposed inertia elements operable to extend through said openings presenting said non-circular profile.
9. A pulley as set forth in claim 8, wherein said inertial elements are pivotally mounted on said pulley and each inertia element has a spring biasing said inertia element to an extended position, configuring said rim in said non-circular profile, said biasing element having a mass positioned relative to said spring and pivot enabling said inertia element to

move from said extended position to a retracted position as said pulley increases in rotational speed.

10. A pulley as set forth in claim 1, wherein said drive assembly is a hydraulic cylinder communicating with a source of oil pressure.

11. A pulley as set forth in claim 10, wherein said rim has a generally non-circular profile, said pulley further comprises a spreader operably engaging between said hydraulic cylinder and said rim, said hydraulic cylinder urging said spreader to engage said rim urging said rim towards said circular profile as said oil pressure increases.

12. A pulley as set forth in claim 11, wherein said hydraulic cylinder includes a spring restricting movement of said hydraulic cylinder until said oil pressure reaches a predetermined value.

13. A pulley as set forth in claim 11, wherein said source of oil pressure is an engine on which said pulley is mounted.

14. A pulley as set forth in claim 13, wherein said predetermined value is referenced when said engine operates at about 750 RPM.

15. A pulley comprising:

a hub configured to be mountable on a driving shaft, and

a rim drivingly connected to the hub, said rim having a non-circular profile and said hub having means for orienting said hub in a predetermined position relative to said driving shaft.

16. A pulley as set forth in claim 15 wherein said non-circular profile has a major axis and said predetermined position has the major axis between 90° to 120° from a reference direction, being a direction of the angle of wrap bisection, taken in the direction of rotation of the pulley.

17. A method for operating an engine having an endless drive system and a configurable crankshaft pulley, the method includes the steps of:

providing an engine with a crankshaft pulley having a configurable profile;

altering the profile of the crankshaft pulley between a circular and a noncircular profile to generate a counteracting torque in the endless drive in response to engine speed.

18. A method as set forth in claim 17, further including the steps

sensing predetermined engine conditions;

determining from said engine conditions whether torque loads in the endless drive are in excess or about to be in excess of a predetermined value; and

responsively altering the profile of the crankshaft pulley.

19. A method as set forth in claim 18, wherein said predetermined engine characteristics include engine speed and tension in the endless drive.